

This listing of claims will replace all prior versions, and listings, of claims in the application:

- 1 Claim 1 (currently amended): A method for communicating at least two source signals  
2 from a first location toward a second location, the method comprising:  
3 a) generating a local oscillator signal for each of the at least two source signals;  
4 b) selecting one or more signals from among the at least two source signals to  
5 define one or more selected source signals;  
6 c) separately mixing each of the one or more selected source signals with a  
7 corresponding local oscillator signal to generate mixed selected signals;  
8 d) combining the mixed selected signals to generate a transmission signal; and  
9 e) transmitting the transmission signal towards the second location.

- 1 Claim 2 (original): The method of claim 1 further comprising:  
2 - converting the transmission signal to an optical signal before transmitting the  
3 transmission signal towards the second location.

- 1 Claim 3 (currently amended): The method of claim 1 wherein the ~~act~~ step of generating a  
2 local oscillator signal for each of the at least two source signals includes:  
3 i) ~~accepting a pilot carrier;~~  
4 ii) generating a first local oscillator signal based on ~~the a~~ pilot carrier; and  
5 iii) generating an  $n^{\text{th}}$  local oscillator signal by dividing the first local  
6 oscillator signal by  $2^{n-1}$ , where n is a whole number greater than one.

- 1 Claim 4 (original): The method of claim 3 wherein the pilot carrier has a frequency of  
2 approximately 120 MHz.

- 1 Claim 5 (currently amended): The method of claim 3 wherein the act of generating a first  
2 local oscillator signal based on the pilot carrier is performed by dividing the pilot carrier  
3 by a ~~selected one of two and three~~ whole number greater than one and less than four.

1 Claim 6 (original): The method of claim 3 wherein the each of the local oscillator signals  
2 has a square waveform.

1 Claim 7 (original): The method of claim 3 wherein the  $n^{\text{th}}$  local oscillator signal has less  
2 noise than the  $(n-1)^{\text{th}}$  local oscillator signal.

1 Claim 8 (original): The method of claim 3 wherein the one of the at least two source  
2 signals associated with the  $n^{\text{th}}$  local oscillator signal requires less bandwidth than the one  
3 of the at least two source signals associated with the  $(n-1)^{\text{th}}$  local oscillator signal.

1 Claim 9 (currently amended): A method for communicating at least two source signals  
2 from a first location to a second location, the method comprising:

- 3 a) generating a source local oscillator signal for each of the at least two source  
4 signals;  
5 b) selecting one or more signals from among the at least two source signals to  
6 define one or more selected source signals;  
7 c) separately mixing each of the one or more selected source signals with a  
8 corresponding source local oscillator signal to generate mixed selected signals;  
9 d) combining the mixed selected signals to generate a transmission signal;  
10 e) transmitting the transmission signal to the second location;  
11 f) receiving the transmitted transmission signal at the second location;  
12 g) splitting the received transmission signal to generate ~~mixed~~ selected signals;  
13 h) generating a destination local oscillator signal for each of the at least two  
14 source signals;  
15 i) separately demodulating each of the ~~mixed~~ selected signals using  
16 corresponding ones of the destination local oscillator signals, to generate the  
17 selected source signals.

1 Claim 10 (original): The method of claim 9 further comprising:  
2 - converting the transmission signal to an optical signal before transmitting the  
3 transmission signal towards the second location; and

- 4 - converting the received transmission signal to an electrical signal before  
5 splitting it.

1 Claim 11 (currently amended): The method of claim 9 wherein the act of generating a  
2 source local oscillator signal for each of the at least two source signals includes:

- 3 ~~i) accepting a pilot carrier;~~  
4 ii) generating a first source local oscillator signal based on a the pilot  
5 carrier; and  
6 iii) generating an  $n^{\text{th}}$  source local oscillator signal by dividing the first  
7 source local oscillator signal by  $2^{n-1}$ ,

8 and wherein the act of generating a destination local oscillator signal for each of the at  
9 least two source signals includes:

- 10 ~~i) accepting the pilot carrier;~~  
11 ii) generating a first destination local oscillator signal based on the pilot  
12 carrier; and  
13 iii) generating an  $n^{\text{th}}$  destination local oscillator signal by dividing the first  
14 destination local oscillator signal by  $2^{n-1}$ ,

15 where n is a whole number greater than one.

1 Claim 12 (original): The method of claim 11 wherein the pilot carrier has a frequency of  
2 approximately 120 MHz.

1 Claim 13 (original): The method of claim 9 wherein the source and destination local  
2 oscillator signals are coherent.

1 Claim 14 (currently amended): A method for receiving at least two source signals,  
2 transmitted from a first location, by a second location, the method comprising:

- 3 a) receiving a transmitted signal at the second location;  
4 b) splitting the received signal to generate mixed selected signals;  
5 c) generating a local oscillator signal for each of the at least two source signals;  
6 and

7 d) separately demodulating each of the ~~mixed~~ selected signals using  
8 corresponding ones of the second local oscillator signals, to generate the selected  
9 source signals.

1 Claim 15 (currently amended): The method of claim 14, wherein the received  
2 transmitted signal is an optical signal, the method further comprising:

3 - converting the received transmitted signal to an electrical signal before it is  
4 split.

1 Claim 16 (currently amended): The method of claim 14 wherein the act of generating a  
2 local oscillator signal for each of the at least two source signals includes:

3 ~~i) accepting a pilot carrier;~~  
4 ii) generating a first local oscillator signal based on ~~the~~ a pilot carrier; and  
5 iii) generating an  $n^{\text{th}}$  local oscillator signal by dividing the first local  
6 oscillator signal by  $2^{n-1}$ ,  
7

where n is a whole number greater than one.

1 Claim 17 (original): The method of claim 16 wherein the pilot carrier has a frequency of  
2 approximately 120 MHz.

1 Claim 18 (currently amended): The method of claim 16 wherein the act of generating a  
2 first local oscillator signal based on the pilot carrier is performed by dividing the pilot  
3 carrier by ~~selected one of two and three~~ whole number greater than one and less than  
4 four.

1 Claim 19 (original): The method of claim 16 wherein the each of the local oscillator  
2 signals has a square waveform.

1 Claim 20 (original): The method of claim 16 wherein the  $n^{\text{th}}$  local oscillator signal has  
2 less noise than the  $(n-1)^{\text{th}}$  local oscillator signal.

1 Claim 21 (original): The method of claim 16 wherein the one of the at least two source  
2 signals associated with the  $n^{\text{th}}$  local oscillator signal requires less bandwidth than the one  
3 of the at least two source signals associated with the  $(n-1)^{\text{th}}$  local oscillator signal.

1 Claim 22 (currently amended): A transmitter for transmitting selected ones of at least  
2 two source signals, the transmitter comprising:  
3 a) an n-stage ripple counter for generating a local oscillator signal for each of the  
4 at least two source signals;  
5 b) a selector for selecting one or more signals from among the at least two source  
6 signals to define one or more selected source signals;  
7 c) a plurality of mixers, the plurality of mixers  
8 i) having a first set of inputs coupled with the selector for accepting the  
9 one or more selected source signals,  
10 ii) having a second set of inputs coupled with the n-stage ripple counter  
11 for accepting the local oscillator signals,  
12 iii) being adapted to separately mix each of the selected source signals  
13 with a corresponding one of the local oscillator signals to generate mixed  
14 selected signals, and  
15 iv) having a set of outputs for providing the mixed selected signals; and  
16 d) an n-way combiner, the n-way combiner having a set of inputs coupled with  
17 the set of outputs of the mixer, and being adapted to combine the mixed selected  
18 signals to generate a transmission signal.

1 Claim 23 (original): The transmitter of claim 22 further comprising:  
2 e) an electrical to optical converter, coupled with the n-way combiner and being  
3 adapted to convert the transmission signal to an optical signal.

1 Claim 24 (currently amended): The transmitter of claim 22 wherein the ripple counter:  
2 i) generates a first local oscillator signal based on a pilot carrier; and  
3 ii) generates an  $n^{\text{th}}$  local oscillator signal by dividing the first local  
4 oscillator signal by  $2^{n-1}$ .

5 where n is a whole number greater than one.

1 Claim 25 (original): The transmitter of claim 24 wherein the pilot carrier has a frequency  
2 of approximately 120 MHz.

1 Claim 26 (original): The transmitter of claim 24 wherein the ripple counter generates the  
2  $n^{\text{th}}$  local oscillator signal with less noise than the  $(n-1)^{\text{th}}$  local oscillator signal.

1 Claim 27 (original): The transmitter of claim 24 wherein the one of the at least two  
2 source signals associated with the  $n^{\text{th}}$  local oscillator signal requires less bandwidth than  
3 the one of the at least two source signals associated with the  $(n-1)^{\text{th}}$  local oscillator signal.

1 Claim 28 (currently amended): A receiver for receiving at least two source signals,  
2 transmitted from a first location, the receiver comprising:

- 3 a) an n-way splitter, the n-way splitter
- 4 i) having an input for accepting a signal,
- 5 ii) being adapted to split the received signal to generate ~~mixed~~ selected
- 6 signals, and
- 7 iii) having a set of outputs for providing the ~~mixed~~ selected signals;
- 8 b) an n-stage ripple counter, the n-stage ripple counter
- 9 i) adapted to generate a local oscillator signal for each of the at least two
- 10 source signals, and
- 11 ii) having a set of outputs for providing the local oscillator signals; and
- 12 d) a plurality of mixers, the plurality of mixers
- 13 i) having a first set of inputs coupled with the set of outputs of the n-way
- 14 splitter,
- 15 ii) having a second set of inputs coupled with the set of outputs of the
- 16 n-stage ripple counter, and
- 17 iii) adapted to separately demodulate each of the ~~mixed~~ selected signals at
- 18 its first second of inputs using corresponding ones of the second local

19 oscillator signals at its second set of inputs, to generate the selected source  
20 signals.

1 Claim 29 (currently amended): The receiver of claim 28 wherein the n-stage ripple  
2 counter is adapted to:

- 3 i) generate a first local oscillator signal based on a pilot carrier; and  
4 ii) generate an  $n^{\text{th}}$  local oscillator signal by dividing the first local  
5 oscillator signal by  $2^{n-1}$ ,

6 where n is a whole number greater than one.

1 Claim 30 (original): The receiver of claim 29 wherein the pilot carrier has a frequency of  
2 approximately 120 MHz.

1 Claim 31 (original): The receiver of claim 29 wherein the each of the local oscillator  
2 signals generated by the n-stage ripple counter has a square waveform.

1 Claim 32 (original): The receiver of claim 29 wherein n-stage ripple counter generates  
2 the  $n^{\text{th}}$  local oscillator signal with less noise than the  $(n-1)^{\text{th}}$  local oscillator signal.

1 Claim 33 (original): The receiver of claim 29 wherein the one of the at least two source  
2 signals associated with the  $n^{\text{th}}$  local oscillator signal requires less bandwidth than the one  
3 of the at least two source signals associated with the  $(n-1)^{\text{th}}$  local oscillator signal.

1 Claim 34 (currently amended): A method for communicating at least two downstream  
2 signals from a first location to a second location and for communicating at least two  
3 upstream signals from the second location to the first location, the method comprising:  
4 a) generating a downstream source local oscillator signal for each of the at least  
5 two downstream signals;  
6 b) selecting one or more signals from among the at least two downstream signals  
7 to define one or more selected downstream signals;

- 8 c) separately mixing each of the one or more selected downstream signals with a  
9 corresponding downstream source local oscillator signal to generate mixed  
10 selected downstream signals;  
11 d) combining the mixed selected downstream signals to generate a downstream  
12 transmission signal;  
13 e) transmitting the downstream transmission signal to the second location;  
14 f) receiving the transmitted downstream transmission signal at the second  
15 location;  
16 g) splitting the received downstream transmission signal to generate mixed  
17 selected downstream signals;  
18 h) generating a downstream destination local oscillator signal for each of the at  
19 least two downstream signals;  
20 i) separately demodulating each of the mixed selected downstream signals using  
21 corresponding ones of the downstream destination local oscillator signals, to  
22 generate the selected downstream signals;  
23 j) generating an upstream source local oscillator signal for each of the at least two  
24 upstream signals;  
25 k) separately mixing each of the upstream signals with a corresponding source  
26 upstream local oscillator signal to generate mixed upstream signals;  
27 l) combining the mixed upstream signals to generate an upstream transmission  
28 signal;  
29 m) transmitting the upstream transmission signal to the first location;  
30 n) receiving the transmitted upstream transmission signal at the first location;  
31 o) splitting the received upstream transmission signal to generate mixed upstream  
32 signals;  
33 p) generating a upstream destination local oscillator signal for each of the at least  
34 two upstream signals; and  
35 q) separately demodulating each of the mixed upstream signals using  
36 corresponding ones of the upstream destination local oscillator signals, to  
37 generate the upstream signals.



1 Claim 35 (original): The method of claim 34 further comprising:  
2 - converting the downstream transmission signal to a first optical signal before  
3 transmitting the transmission signal towards the second location; and  
4 - converting the upstream transmission signal to a second optical signal before  
5 transmitting the transmission signal towards the first location,  
6 wherein the first and second optical signals have different wavelengths.

1 Claim 36 (currently amended): The method of claim 34 wherein the act of generating a  
2 downstream source local oscillator signal for each of the at least two downstream signals  
3 includes:

- 4 ~~i) accepting a pilot carrier;~~  
5 ii) -generating a first downstream source local oscillator signal by dividing  
6 the a pilot carrier by a first number; and  
7 iii) -generating an  $n^{\text{th}}$  downstream source local oscillator signal by dividing  
8 the first downstream source local oscillator signal by  $2^{n-1}$ ,

9 wherein the act of generating a downstream destination local oscillator signal for  
10 each of the at least two source signals includes:

- 11 ~~i) accepting the pilot carrier;~~  
12 ii) generating a first downstream destination local oscillator signal by  
13 dividing the pilot carrier by the first number; and  
14 iii) generating an  $n^{\text{th}}$  downstream destination local oscillator signal by  
15 dividing the first downstream destination local oscillator signal by  $2^{n-1}$ ,

16 wherein the act of generating an upstream source local oscillator signal for each  
17 of the at least two upstream signals includes:

- 18 ~~i) accepting the pilot carrier;~~  
19 ii) -generating a first upstream source local oscillator signal by dividing  
20 the pilot carrier by a second number, the second number being different  
21 from the first number; and  
22 iii) generating an  $n^{\text{th}}$  upstream source local oscillator signal by dividing  
23 the first upstream source local oscillator signal by  $2^{n-1}$ , and

24 wherein the act of generating an upstream destination local oscillator signal for  
25 each of the at least two upstream signals includes:

26 ~~i) accepting the pilot carrier;~~

27 ii) generating a first upstream destination local oscillator signal by  
28 dividing the pilot carrier by the second number; and

29 iii) generating an  $n^{\text{th}}$  upstream destination local oscillator signal by  
30 dividing the first upstream destination local oscillator signal by  $2^{n-1}$ ,

31 where  $n$  is a whole number greater than one.

1 Claim 37 (original): The method of claim 36 wherein the pilot carrier has a frequency of  
2 approximately 120 MHz.